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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,831	10/24/2003	Satoshi Nakagawa	5000-5131	9249
27123	7590	06/28/2005	EXAMINER	
MORGAN & FINNEGAN, L.L.P.			HODGES, MATTHEW P	
3 WORLD FINANCIAL CENTER			ART UNIT	PAPER NUMBER
NEW YORK, NY 10281-2101			2879	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,831

Applicant(s)

NAKAGAWA ET AL.

Examiner

Matt P. Hodges

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/24/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Information Disclosure Statement

The information disclosure statement filed 12/17/2004 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.

The 1449 does not appear with the submission however two foreign references without English translations or descriptions of reference appear to be included in the file. Those references have not been considered as they do not include a statement of relevance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 6, 11, and 14-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishihara et al. (US 2003/0048072 A1).

Regarding claim 1, Ishihara discloses (see figure 6b) an organic EL device including a substrate, an anode formed on the substrate, an organic layer formed on the anode and including a light emitting layer, and a cathode formed on the organic layer. The cathode further includes an electron injecting/transporting layer and a metal film covering the electron injecting layer. The electron transporting layer is a metal compound (Paragraph 53) while the metal thin film is a metal layer (Paragraph 136).

Regarding claim 2, the very low resistivity of platinum or gold in the metal thin film would lead to the cathode having a lower overall resistivity than a similar ITO layer.

Regarding claims 4 and 6, the light is emitted through the cathode. (See figure 6b).

Regarding claim 11, the resistivity of the gold metal film layer is lower than that of the Alq electron injecting layer.

Regarding claims 14-16, Ishihara further discloses the use of a red, blue, and green light emitting layer in the organic EL device. (See figure 6a).

Claims 1-3 and 7-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Ke et al. (US 2005/0012448 A1).

Regarding claims 1, 9, 10, 11, and 12, Ke discloses (see figure 1) an organic EL device including a substrate (2), an anode (3) formed on the substrate, an organic layer (5-6) formed on the anode and including a light emitting layer (6), and a cathode (8) formed on the organic layer. The cathode further includes an electron injecting layer (9) and a metal film (10) covering the electron injecting layer. The electron injecting layer is constructed of Calcium while the metal thin film is made of Silver. (Paragraphs 0004-0008).

Regarding claims 2 and 3, the very low resistivity of silver and calcium in the prior art cathode is less than the overall resistivity of a similar ITO layer.

Regarding claims 7 and 8, the electron injecting layer is contiguous to the light emitting layer and has a work function that is less than the absolute value of the lowest unoccupied molecular orbital level of the contiguous portion. The organic layer further is composed of more than one layer.

Claims 1-4, 6-9, and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Seo et al. (US 2003/0062826 A1).

Regarding claims 1, 9, and 11, Seo discloses (see figure 5) an organic EL device including a substrate, an anode (501), an organic layer (502) formed on the anode and including a light emitting layer (504), and a cathode (505) formed on the organic layer. The cathode further includes an electron injecting layer and a metal film covering the electron injecting layer.

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The electron injecting layer is constructed of Cesium while the metal thin film is made of Aluminum. (Paragraphs 0110-0113).

Regarding claims 2 and 3, the very low resistivity of Cs and Al in the prior art cathode is less than the overall resistivity of a similar ITO layer.

Regarding claims 4 and 6, the light is emitted through the cathode. (See figure 5).

Regarding claims 7 and 8, the electron injecting layer is contiguous to the light emitting layer and has a work function that is less than the absolute value of the lowest unoccupied molecular orbital level of the contiguous portion. The organic layer further is composed of more than one layer.

Regarding claims 12, Seo discloses the alternative use of Silver instead of Aluminum for the thin metal film layer. (Paragraph 0175)

Regarding claim 13, Seo further discloses the use of a cathode including a 2 nm thick Cs layer where the total layer thickness is between 10-30 nm depending on the choice of the metal thin film layer and its transmittance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo et al. (US 2003/0062826 A1) in view of Haight et al. (US 5,714,838).

Regarding claims 10 and 17, Seo discloses the device as claimed (see rejection of claim 1 above) but does not appear to specify the use of Ca as the material for the electron injecting layers. However Haight, in the same field of endeavor, discloses the use of Ca for the electron injecting layer in order to advantageously increase the electron injecting efficiency. (Column 2 lines 10-34). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the use of Ca for the electron injecting layer as taught by Haight into the device as disclosed by Seo in order to advantageously improve the electron injecting efficiency.

Regarding claim 18, Seo in view of Haight discloses the device as claimed (See rejection of claim 17 above) but does not appear to suggest the inversion of the anode and cathode on the substrate. However the inverting of layers on the substrate in order to change the device from a top emitting to a bottom emitting device (and vice versa) is well understood in the art of organic EL devices. Further the inversion from a top emitting to a bottom emitting advantageously provides for the light to be emitted through the substrate thus leaving the anode of the device exposed and more easily accessible to the power supply and control wiring. Forming the substrate at the viewer's end of the device also allows for additional structural protection during use. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to invert the device layers, including the anode and cathode, in the device as disclosed by Seo in view of Haight in order to advantageously increase the accessible to the power supply and control wiring and to improve structural protection during use.

Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seo et al. (US 2003/0062826 A1).

Regarding claim 5, Seo discloses the device as claimed (See rejection of claim 1 above) but does not appear to suggest the inversion of the anode and cathode on the substrate. However the inverting of layers on the substrate in order to change the device from a top emitting to a bottom emitting device (and vice versa) is well understood in the art of organic EL devices. Further the inversion from a top emitting to a bottom emitting advantageously provides for the light to be emitted through the substrate thus leaving the anode of the device exposed and more easily accessible to the power supply and control wiring. Forming the substrate at the viewer's end of the device also allows for additional structural protection during use. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to invert the device layers, including the anode and cathode, in the device as disclosed by Seo in order to advantageously increase the accessible to the power supply and control wiring and to improve structural protection during use.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Buckley et al. (US 2004/0070334 A1) discloses the use of Calcium electron injecting layer as part of a cathode of an organic EL device.

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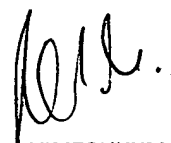
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (571) 272-2454. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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